REMARKS

Claims 1-15 and 17-21 are pending in the present application. Claim 16 has been cancelled without prejudice to the subject matter contained therein.

The Examiner has withdrawn claims 8 and 10-13 from allowance in view of newly alleged rejections.

A. Rejection under 35 U.S.C. §103 over Skinker in combination with Cama

Claim 1 was rejected under 35 U.S.C. §103 as being unpatentable over Skinker (U.S. Patent 6,285,706) in combination with Cama (U.S. Patent 6,211,457). The rejection under 35 U.S.C. §103 over Skinker in combination with Cama is respectfully traversed.

In formulating the rejection under 35 U.S.C. §103, the Examiner alleges Skinker discloses limitations of claim 1. The Examiner states Skinker fails to disclose the utilization of the technique for an integrated connector. The Examiner alleges Cama teaches the limitation stated by the Examiner to be missing from Skinker. The Examiner alleges it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Skinker with the technique taught by Cama. The Examiner alleges the motivation for the combination would be to secure firm connections with external devices. These allegations and conclusion by the Examiner are respectfully traversed.

With respect to claim 1, claim 1 recites "an electronic power converter …, comprising: an encapsulated portion including at least high-voltage electronic circuitry where components of the at least high-voltage electronic circuitry are coated with an encapsulating material that is substantially free of voids therein; and an integrated connector for receiving a detachable alternating current line cord, the alternating current line cord having at least two wires therein; wherein said power converter is mountable on a printed circuit board."

Skinker, directed to an arrangement of components forming a modem (col. 1, lines 19-20), fails to teach "an encapsulated portion including at least high-voltage electronic circuitry where components of the at least high-voltage electronic circuitry are coated with an encapsulating material that is substantially free of voids therein," as

recited in amended claim 1. Skinker teaches a modem which is a device for use in connecting a digital computer with a source of analog data signals, which translates the analog signals to digital signals to enable the computer to process the data signals and translates digital output signals from the computer to analog data signals (Skinker, Fig. 1, column 1, lines 60-67, column 3, lines 12-22). More specifically, Skinker teaches "the DAA board is contained and fully encapsulated in a housing, preferably a plastic housing, so that all of the high voltage circuits are not accessible to the user without destruction of the housing," (Skinker, Column 2, lines 13-17). Skinker teaches, first, a "DAA [data access arrangement] board" in a modem instead of the "electronic power converter for supplying direct current power output from alternating current power input" as recited in claim 1. Also, Skinker teaches that the "DAA board" is "encapsulated in a housing" (Applicants interpret this as "enclosed" within the housing) instead of "coated with an encapsulating material that is substantially free of voids," as recited in amended claim 1.

With respect to Cama, Cama also fails to teach "an encapsulated portion including at least high-voltage electronic circuitry where components of the at least high-voltage electronic circuitry are coated with an encapsulating material that is substantially free of voids therein," as recited in claim 1, as amended. More specifically, Cama is directed to an electromagnetic shielded interface or connector (Cama, Abstract) instead of a power converter having "high-voltage electronic circuitry" as recited in claim 1.

In summary, neither Skinker nor Cama, either individually or in combination, teach, suggest or render obvious an electronic power converter for supplying direct current power output, particularly a converter comprising "an encapsulated portion including at least high-voltage electronic circuitry where components of the at least high-voltage electronic circuitry are coated with an encapsulating material that is substantially free of voids therein," as set forth in claim 1. Accordingly, in view of the amendments and remarks set forth above, the Examiner is respectfully requested to reconsider and withdraw the rejection of claim 1, and claims dependent therefrom, under 35 U.S.C. §103.

B. Rejection under 35 U.S.C. §103 over Skinker in Combination with Cama in view of Wong

Claims 2-6 and 8-13 were rejected under 35 U.S.C. §103 as being unpatentable over Skinker (U.S. Patent 6,285,706) in combination with Cama (U.S. Patent 6,211,457) in further combination with Wong (U.S. Patent 6,456,511). The rejection under 35 U.S.C. §103 over Skinker in combination with Cama in further combination with Wong is respectfully traversed and the arguments set forth above relative to the arguable combination and teachings of Skinker and Cama are incorporated herein.

In formulating the rejection under 35 U.S.C. §103, the Examiner alleges Skinker in combination with Cama discloses limitations of claim 1, except for an inrush limiting circuit as set forth in dependent claim 2 and in independent claim 8. The Examiner alleges Wong teaches a similar technique for an inrush limiting circuit, and that it would have been obvious to modify the "power supply topology" of Skinker utilizing the technique taught by Wong. Notably, Wong does not appear to have an active circuit to limit the inrush current, particularly as set forth in the rejected claims. The Examiner alleges the motivation for the combination would be to provide a power supply to provide protection to the user. Applicants respectfully challenge the alleged basis and request that the Examiner identify the teaching relied upon to support the motivation. Regarding claim 4, the Examiner alleges that one of the references, apparently Wong, discloses limitations of claim 4.

Regarding claims 3, 6, 9 and 12, the Examiner alleges Skinker in combination with Cama and in further combination with Wong discloses the claimed subject matter except for an opto-coupler. The Examiner alleges "It would have been obvious one having ordinary skill in the art at the time the invention was made to utilize transformer as isolator, since it has been held be within the general skill of a worker in the art to select a known device on the basis of its suitability for the intended use as a matter of obvious design choice [*sic*]." These allegations and conclusion by the Examiner, as well as the rejection based thereon, are also respectfully traversed.

With respect to claims 2 and 8, these claims both recite an "inrush current limiting circuit" including "a MOSFET switch connected to the direct current return path of the bridge rectifier." Wong fails to teach "a MOSFET switch connected to the direct current

return path of the bridge rectifier." More specifically, Wong teaches "the primary side 102 includes a switching transistor 75, preferably an N-channel enhancement mode power metal-oxide-silicon field effect transistor (MOSFET), having a drain electrode connected to one side of the primary winding 91 and a source electrode connected to primary side ground return," (Wong, Fig. 2, Column 5, lines 60-65). It is clear that the MOSFET of Wong lacks active circuitry to limit the inrush current and is connected to a ground return instead of "the direct current return path of the bridge rectifier" as recited in the claims. Skinker, Cama and Wong, individually or in combination, fail to teach, suggest or render obvious an "inrush current limiting circuit" including "a MOSFET switch connected to the direct current return path of the bridge rectifier" as set forth in claims 2 and 8.

Further, claims 2 and 8 recite "a bridge rectifier with a direct current return path." In contrast, Wong fails to teach "a bridge rectifier with a direct current return path." More specifically, Wong teaches "the primary side 102 includes a switching transistor 75, preferably an N-channel enhancement mode power metal-oxide-silicon field effect transistor (MOSFET), having a drain electrode connected to one side of the primary winding 91 and a source electrode connected to primary side ground return," (Wong, Fig. 2, Column 5, lines 60-65). It is clear that Wong teaches a bridge rectifier with a ground return instead of a "direct current return path" as recited in claim 2. Hence, Skinker, Cama and Wong, individually or in combination, fail to teach or suggest "a bridge rectifier with a direct current return path," and claims 2 and 8 are patentably distinguishable over the arguable combination.

With respect to dependent claims 10, 11 and 13 the Applicants, for the sake of brevity, will not address the reasons supporting patentability for these individual dependent claims, as these claim depends directly or indirectly from allowable independent claim 8. The Applicants reserve the right to address the patentability of these dependent claims at a later time, should it be necessary.

With respect to claim 4, the claim recites a function for low voltage sensing, the function consisting of a peak detector connected to the power supply transformer for sensing a primary rectified voltage; and a pin, accessible to the user, for providing a signal representing the low voltage sense function. In contrast Wong fails to teach "a

pin, accessible to the user, for providing a signal representing the function for sensing low voltage." More specifically Wong teaches "a current sense resistor 86 and a resistive divider network including resistors 84 and 85 provide current and voltage monitoring values to a charge control circuit 89," (Wong, Fig. 2, item 117, pin 7, Column 6, 15-18, Fig. 3, item 117). It is clear that Wong provides a voltage sensing signal to a pin connected to an integrated circuit for charge control, instead of a pin that is accessible.

Skinker also fails to disclose a low voltage sense function, the function consisting of a peak detector connected to the power supply transformer for sensing a primary rectified voltage; and a pin, accessible to the user, for providing a signal representing the function for sensing low voltage, as set forth in amended claim 4. More specifically, Skinker teaches the following, which describes the elements of an interface between a computer and the modem disclosed by Skinker, instead of a low voltage sense function for a power converter.

> "Proceeding now to FIG. 2, the modem engine 48 is shown in more detail. A host interface block 100 is connected to the XA and XD lines 102 and 104 which form the address and data portions of the X bus 28. The control signals are similarly connected to portions of the X bus 28 but are not shown for simplicity. The host interface 100 is used to provide the primary interface to the processor 10 as is conventional for modem operations. Therefore, the host interface 100 conforms to the conventional UART definitions and is designed to be located at the conventional address locations.
>
> The XA bus 102 and XD bus 104 are also connected to a microcomputer 106 to allow direct access to certain functions of the microcomputer 106. Additionally, the microcomputer 106 is connected to the host interface 100 via certain designated control pins to allow control of functions of the host interface 100. Additionally, a memory data bus 108 and a memory address bus 110 are provided from the microcomputer 106 for accessing external memory devices and memory-mapped I/O devices. A memory control bus is also provided, but is not shown for simplicity. These external memory devices include a ROM 112 which includes the operating instructions for the microcomputer 106 and a RAM 114 which provides additional memory with the microcomputer 106. The host interface 100 is a memory-mapped I/O device, and thus connected to the memory address bus 110 and the memory data bus 108, to allow high speed communications between the microcomputer 106 and the host interface 100. In addition, a DSP interface 116, as is well known, is connected to the memory data bus 108 and the memory address bus 110 to allow parallel format communication between the microcomputer 106 and the DSP interface 116. The DSP interface 116 is connected to the DSP or digital signal processor chip

> 118 which performs the calculations to provide desired modem functions. The DSP 118 is a conventional unit such as the DSP 16a provided by AT&T. The DSP interface 116 is preferably the companion chip to the DSP 118. The DSP interface 116 and the DSP 118 provide the data pump for the modem engine 48. The microcomputer 106 is preferably a conventional 8 bit microcomputer."
>
> (Skinker, Column 3, lines 23-63)

Cama also fails to teach a low voltage sense function, as set forth in claim 4, or the pin for providing a signal representing the low voltage sense function. More specifically, Cama is directed to an electromagnetic shielded connector and fails to disclose circuitry for voltage detection as recited in amended claim 4 (Cama, abstract). Hence, Skinker, Cama and Wong, individually or in combination, fail to teach or suggest the limitations specifically set forth in the claims.

With respect to dependent claim 5, the Applicants, for the sake of brevity, will not address the reasons supporting patentability for this dependent claim, as this claim depends directly from presumably allowable claim 4. Applicants, however, reserve the right to address the patentability of this dependent claim at a later time, should it be necessary.

With respect to claims 3, 6, 9 and 12, claim 3 recites "a secondary side, isolated low voltage ON/OFF function, said function being implemented by circuitry including a transformer coupled peak detector to power a light emitter of an opto-coupler which has a photo-detector, the photo-detector being connected to the switching controller in a manner adequate to disable the power supply output in response to the signal received by the photo-detector, said emitter is also connected to a user accessible ON/OFF pin." The Examiner failed to show where in the cited patents, or otherwise, that the use of a transformer coupled peak detector to power a light emitter of an opto-coupler, as recited in claim 3, would have been an obvious design choice to one of ordinary skill in the art at the time of the invention (MPEP 2144.07). In setting for the rejection, *In re Leshin* is cited – Applicants note that the Leshin case dealt with the substitution of one type of plastic for another as the basis for obviousness. Applicants urge that a reliance on *In re Leshin* is inappropriate when no teaching of an equivalent for the opto-coupler has been set forth in the rejection. In the event that this rejection is maintained, Applicants respectfully request that the Examiner set forth the information relied upon as the basis

for urging that the use of an opto-coupler in the manner claimed would have been an obvious design choice.

With respect to claim 6, the claim recites a low voltage sense function implemented by circuitry including a peak detector for sensing the instantaneous primary rectified voltage connected to a linear regulator / voltage limiting circuit, said linear regulator / voltage limiting circuit being further connected to a light emitter of an opto-coupler, said opto-coupler being further connected to an error amplifier and an ON/OFF pin in such a manner as to provide an isolated secondary low voltage indication of the primary line voltage and to allow the user to turn the device off. Once again, the Examiner failed to show where the use of an opto-coupler in the manner set forth in claim 6 would have been an obvious design choice to one of ordinary skill in the art at the time of the invention (MPEP 2144.07). In the event that the rejection of claim 6 is maintained, Applicants respectfully request that the Examiner set forth the information relied upon as the basis for urging that the use of an opto-coupler in the manner recited would have been an obvious design choice.

With respect to claim 9, the claim recites the power converter, further comprising: a secondary side, isolated low voltage ON/OFF function, said function being implemented by circuitry including a transformer coupled peak detector to power a light emitter of an opto-coupler which has a photo-detector, the photo-detector being connected to the primary controller in a manner adequate to disable the power supply output in response to the signal received by the photo-detector, said emitter is also connected to a user accessible ON/OFF pin. Here again, the rejection fails to establish evidence as to the use of an opto-coupler as recited in claim 9, or how such use would have been an obvious design choice to one of ordinary skill in the art at the time of the invention (MPEP 2144.07). In the event that this rejection is maintained, Applicants respectfully request that the Examiner set forth the information relied upon as the basis for urging that the use of an opto-coupler in the manner claimed would have been an obvious design choice.

With respect to claim 12, claim 12 recites “a function for sensing low voltage, said function being implemented by circuitry including a peak detector for sensing the instantaneous primary rectified voltage connected to a linear regulator / voltage limiting

circuit, said linear regulator / voltage limiting circuit being further connected to a light emitter of an opto-coupler, said opto-coupler being further connected to an error amplifier and an ON/OFF pin in such a manner as to provide ~~a~~ an isolated secondary low voltage indication of the primary line voltage and to allow the user to turn the device off." The Examiner again failed to show the required evidence in the art that the use of an opto-coupler as recited in claim 12 would have been an obvious design choice to one of ordinary skill in the art at the time of the invention (MPEP 2144.07).

!n view of the amendments and remarks set forth above, the Examiner is respectfully requested to reconsider and withdraw the rejections of claims 2-6 and 8-13 under 35 U.S.C. §103.

C. Rejection under 35 U.S.C. §103 over Chen in Combination With Nakamura

Claim 7 has been rejected under 35 U.S.C. §103 as being unpatentable over Chen (U.S. Patent 6,317,324) in combination with Nakamura (U.S. Patent 4,906,208). This rejection under 35 U.S.C. §103 over Chen in combination with Nakamura is respectfully traversed.

In formulating the rejection under 35 U.S.C. §103, the Examiner alleges Chen discloses an encapsulated power converter. The Examiner states that Chen fails to disclose the technique of a detachable line cord connector with threaded mounts and earth ground. The Examiner alleges Nakamura teaches the technique of a detachable line cord connector with threaded mounts and earth ground. These allegations and conclusion by the Examiner, and the rejections based thereon, are respectfully traversed.

With respect to claim 7, claim 7 recites [a]n electronic encapsulated power converter, comprising: a case; circuitry for supplying direct current power output from alternating current power input; an encapsulating material coating the circuitry, the encapsulating material having thermal conductivity; an integrated, 3-pin connector for receiving a detachable alternating current line cord, said connector accessible through said case; and threaded mounts extending from said case, wherein the threaded mounts are earth grounded and allow the converter to be rigidly mounted to a circuit board.

Chen, fails to teach "an encapsulating material coating the circuitry, the encapsulating material having a high dielectric constant and thermal conductivity" as recited in amended claim 7. More specifically, Chen teaches

> "to address the above-discussed deficiencies of the prior art, the present invention provides an encapsulant structure for retaining an electronic circuit having heat-generating components within a case that at least partially surrounds the electronic circuit. In one advantageous embodiment, the encapsulant structure provides for a thermally conductive insert to be located within the case proximate the heat-generating components. The insert increases the heat transfer efficiency from the electronic circuit to the case. In a related embodiment, the encapsulant structure further includes a potting material, having a lower coefficient of thermal conductivity than the insert, that encapsulates both the electronic circuit and the insert,"
> (Chen, Column 1, lines 57-67 to Column 2, lines 1-2)

It is clear that Chen fails to teach the specifics of amended claim 7. Chen also fails to teach "an integrated 3 pin connector for receiving a detachable alternating current line cord" as recited in the amended claim.

Nakamura also fails to teach an encapsulating material coating the circuitry, the encapsulating material having a high dielectric constant and thermal conductivity, or an integrated, 3-pin connector for receiving a detachable alternating current line cord, said connector accessible through said case, as recited in claim 7. Rather, Nakamura teaches an electromagnetic shielded electrical connector to be mounted on a printed circuit board (Nakamura, Column 1, lines 65-67 to column 2, lines 1-7) instead of an integrated connector being integrated with encapsulated circuitry as recited in claim 7.

In summary both Chen and Nakamura either individually or in combination, fail to teach, suggest or render obvious the limitations of an encapsulating material coating the circuitry, the encapsulating material having thermal conductivity or, an integrated, 3-pin connector for receiving a detachable alternating current line cord, and the connector accessible through the case, as specifically recited in amended claim 7. Accordingly, in view of the amendments and remarks set forth above, the Examiner is respectfully requested to withdraw the rejection of claim 7 under 35 U.S.C. §103.

D. Rejection under 35 U.S.C. §103 over Chen in Combination with Nakamura in Further Combination with Wong

Claims 14-21 were rejected under 35 U.S.C. §103 as being unpatentable over Chen (U.S. Patent 6,317,324) in combination with Nakamura (U.S. Patent 4,906,208). in further combination with Wong (U.S. Patent 6,456,511). The rejection under 35 U.S.C. §103 over Chen in combination with Nakamura and Wong is respectfully traversed.

In formulating the rejection under 35 U.S.C. §103, the Examiner alleges Chen in combination with Nakamura disclose the claimed subject matter as explained in claim 7 and thermal conductive molded insert. Applicants respectfully incorporate herein the prior discussions relative to the failure of the alleged teachings of Chen in combination with Nakamura. The Examiner further acknowledges that Chen in Combination with Nakamura fail to disclose utilization of a rectifier, MOSFET, capacitor, voltage detection, resistive charging path, resistive connection, a comparison circuit and an error amplifier. The Examiner alleges Wong teaches these missing limitations. These allegations and conclusion by the Examiner are, once again, respectfully traversed.

With respect to claim 14, the claim recites an electronic power converter including fully encapsulated electronic circuitry, the encapsulating material coating the circuitry, the encapsulating material having a high dielectric constant and thermal conductivity; and an integrated connector, accessed through an aperture in said cover, for receiving a detachable alternating current line cord, the alternating current line cord having at least two wires therein, wherein said power converter is mounted on said circuit board.

Chen teaches, as set forth above, an "encapsulant structure" for retaining an electronic circuit within a case that at least partially surrounds the electronic circuit. The structure provides for a thermally conductive insert to be located within the case proximate the heat-generating components, and in another embodiment may include a potting material, having a lower coefficient of thermal conductivity than the insert, that encapsulates both the electronic circuit and the insert, (Chen, Column 1, lines 57-67 to Column 2, lines 1-2). Chen fails to teach circuitry coated with an encapsulating material, the encapsulating material having thermal conductivity and dielectric constant;

and an integrated connector for receiving a detachable alternating current line cord, said connector accessible through said case as set forth in claim 14.

Nakamura also fails to teach circuitry coated with an encapsulating material, and an integrated connector for receiving a detachable alternating current line cord, said connector accessible through said case as recited in claim 14. More specifically, Nakamura teaches an electromagnetic shielded electrical connector to be mounted on a printed circuit board (Nakamura, Column 1, lines 65-67 to column 2, lines 1-7) instead of an integrated connector, the integrated connector being integrated with encapsulated circuitry as recited in claim 14.

Wong also fails to teach the circuitry coated with an encapsulating material, the encapsulating material having thermal conductivity, and an integrated connector for receiving a detachable alternating current line cord, said connector accessible through said case as recited in claim 14. More specifically, Wong is directed to a "start-up circuit for flyback converter having secondary pulse width modulation" (Wong, Title, Abstract) and fails to disclose encapsulating material or an integrated connector accessible through an aperture in a cover.

In summary, Chen, Nakamura and Wong either individually or in combination, fail to teach, suggest or render obvious an electronic power converter including fully encapsulated electronic circuitry, the circuitry coated with an encapsulating material; and an integrated connector, accessed through an aperture in said cover, for receiving a detachable alternating current line cord, the alternating current line cord having at least two wires therein, wherein said power converter is mounted on said circuit board, as set forth in amended claim 14.

With respect to dependent claim 15, Applicants will not address the reasons supporting patentability for this individual dependent claim for the sake of brevity, as this claim depends directly from allowable independent claim 14. Applicants reserve the right to address the patentability of this dependent claim at a later time, should it be necessary.

With respect to claim 17, claim 17 recites an "inrush current limiting circuit" including "a MOSFET switch connected to the direct current return path of the bridge rectifier."

In contrast, Wong fails to teach "a MOSFET switch connected to the direct current return path of the bridge rectifier." Wong teaches, as previously described, an N-channel enhancement mode power metal-oxide-silicon field effect transistor (MOSFET), having a drain electrode connected to one side of the primary winding 91 and a source electrode connected to primary side ground return as found at Fig. 2, and Column 5, lines 60-65. The MOSFET of Wong is connected to a ground return instead of "the direct current return path of the bridge rectifier" as recited in the rejected claim.

Furthermore, claim 17 recites "a bridge rectifier with a direct current return path." Wong teaches a bridge rectifier with a ground return instead of a "direct current return path" as recited in claim 17.

In summary Chen, Nakamura and Wong, either individually or in combination, fail to teach, suggest or render obvious an "inrush current limiting circuit" including "a MOSFET switch connected to the direct current return path of the bridge rectifier" as set forth in claim 17.

With respect to dependent claims 18-21, the Applicant, for the sake of brevity, will not address the reasons supporting patentability for these individual dependent claims, as these claims depend directly from allowable claim 17. The Applicant reserves the right to address the patentability of these dependent claims at a later time, should it be necessary.

Accordingly, in view of the amendments and remarks set forth above, the Examiner is respectfully requested to reconsider and withdraw the rejection of claims 14-21 under 35 U.S.C. §103.

CONCLUSION

Accordingly, in view of all the reasons set forth above, the Examiner is respectfully requested to reconsider and withdraw the present rejections. Also, an early indication of allowability is earnestly solicited.

In the event that additional fees are required as a result of this response, including fees for extensions of time, such fees should be charged to USPTO Deposit Account No. 50-2737 for Basch & Nickerson LLP.

Respectfully submitted,

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